DOCUMENT RESUME

ED 255 423 SO 016 309

AUTHOR Scommegna, Paola M., Ed.
TITLE Death and Taxes: The Public Policy Impact of Living Longer. Population Trends and Public Policy, Number 5.
INSTITUTION Population Reference Bureau, Inc., Washington, D.C.
PUB DATE Sep 84
NOTE 21p.; Some photographs and charts may not reproduce clearly.
AVAILABLE FROM Circulation Dept., Population Reference Bureau, Inc., P.O. Box 35012, Washington, DC 20013 ($3.00, prepaid plus postage and handling).
PUB TYPE Viewpoints (120)

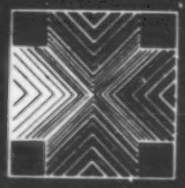
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Aging (Individuals); *Death; Economic Factors; Ethics; Federal Programs; Females; Futures (of Society); Gerontology; Government Role; Males; Medical Research; *Older Adults; *Population Trends; *Public Policy; Research Needs; Retirement; Retirement Benefits; Sex Differences; *Taxes
IDENTIFIERS *Life Expectancy; Longevity

ABSTRACT

Life expectancy trends are examined from a policy maker's perspective. Since the late 1960's, life expectancy among the U.S. elderly has increased at unprecedented rates, from 70.2 years in 1965 to 74.5 years in 1983. Although unforeseeable events, such as outbreaks of new diseases, are not reflected in the projections, current projections assume that U.S. life expectancy will continue to increase at some fraction of the 1970's rates. The impact of longer lives on the current system of public programs for the elderly could be disastrous. Federally-funded medical research has played an important role in declines in mortality; however, while death is delayed, aging is not. Federal dollars toward heart and cancer research outnumber funds for gerontology 20-to-1. More federal research dollars must be focused on slowing the aging process. It is estimated that by the year 2025, 50 percent of the U.S. federal budget will be spent on programs for the elderly. For example, increase in life expectancy will affect the cost of the Veteran's Administration programs and federal employee retirement plans. Because women are expected to continue to live longer than men, research should be focused on diseases that affect men. This might allow men to live longer lives and continue to provide for their wives. (RM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED255423



U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

R. Worrall

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Death and Taxes:

The Public Policy Impact of Living Longer

Death and Taxes: The Public Policy Impact of Living Longer is the fifth in a series of occasional papers, *Population Trends and Public Policy*, published by the Population Reference Bureau, Inc. This series is devoted to a discussion of demographic issues of concern to policymakers.

This report was adapted from the following papers and discussions prepared for the session, *The Future of American Mortality: Social, Biological, and Policy Aspects*, at the Annual Meetings of the American Association for the Advancement of Science, May 1983.

- *The Future of American Mortality: Introduction and Overview*, by Thomas J. Espenshade, The Urban Institute, 2100 M St., N.W., Washington, D.C.
- *Life Expectancy and the Older Population: Demographic Implications of Recent and Prospective Trends in Old Age Mortality*, by Eileen M. Crimmins, Andrus Gerontology Center, University of Southern California, Los Angeles, California.
- *The Impact of Biomedical Accomplishments on Life Expectation and Life Span*, by Leonard Hayflick, Center for Gerontological Studies, University of Florida, Gainesville, Florida.
- *Death and Taxes: The Fiscal Implications of Future Reductions in Mortality*, by Barbara Boyle Torrey and Douglas Norwood, Office of Management and Budget, New Executive Office Building, 726 Jackson Place, Washington, D.C. (Views represent authors' opinion; do not reflect Administration policy.)

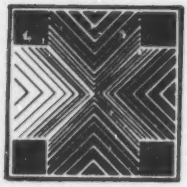
Discussants:

- *Scrutinizing the Assumptions*, Lois M. Verbrugge, Institute of Gerontology and Institute for Social Research, University of Michigan, Ann Arbor, Michigan.
- *Future of American Mortality*, by Charles B. Nam, Center for the Study of Population, Florida State University, Tallahassee, Florida.

Each of these authors contributed to the preparation of this issue of *Population Trends and Public Policy*. For copies of the original papers, please contact the authors directly. Copies of this issue and others in this series may be ordered from the Circulation Department of the Population Reference Bureau, Inc., P.O. Box 35012, Washington, D.C. 20013, at $3 per single copy; 2-10 copies, $2.30 each; 11-50 copies, $1.90 each; 51 or more, $1.50 each. Orders of $20 or less must be prepaid and include $1 for postage and handling.

Population Trends and Public Policy
Number 5, September 1984

Editor: Paola M. Scommegna



Death and Taxes:
The Public Policy Impact of Living Longer

In Summary

Since the late 1960s, life expectancy among the elderly in the United States has increased at historically unprecedented rates. Thanks primarily to a drop in deaths due to heart disease, life expectancy at birth leaped from 70.2 in 1965 to 73.7 in 1980. In 1983, life expectancy at birth stood at 74.5 years—70.8 years for men and 82.2 years for women.

By the year 2000 many experts believe life expectancy for U.S. citizens could be as high as 80 years—74 years for men and 86 for women. While these remarkable advances mean we can all look forward to longer lives, their impact on society and on the current system of public programs for the elderly could be disastrous.

This report analyzes these life expectancy trends based on research first discussed at the 1983 meeting of the American Association for the Advancement of Science. Various aspects of the anticipated "senior-citizen boom" are examined from a policymaker's perspective.

• **Projecting the size of the elderly population.** Americans are living longer than anticipated even ten years ago. The Social Security Administration's life expectancy projections, made during the 1970s, have been subject to revision and re-revision. Current projections assume that U.S. life expectancy will continue to increase at some fraction of the 1970s' rates, which surprised both demographers and actuaries. Unforeseeable events such as outbreaks of new diseases, increases in cancer from environmental pollution, or catastrophes such as nuclear war are not reflected in the projections.

All projections of the future growth of the elderly population between now and 2000 are similar, allowing a relatively narrow range in which to plan. After 2000 a much wider range in the size and age of the elderly population must be considered.

• **Focusing federal research dollars on slowing the aging process.** Federally-funded research on heart disease and cancer has played an important role in declines in mortality. Yet life span—the maximum age attainable—has been left unaltered. More and more Americans can expect to celebrate their 100th birthday, but not many more birthdays afterward. While death is delayed, aging is not. Federal research dollars directed toward heart disease and cancer outnumber funds for gerontology 20-to-1. Policymakers may be helping medical science achieve the dubious goal of keeping people alive well beyond their years of vigor. Striking a balance between research directed toward eliminating the major diseases and toward slowing the aging process is suggested.

• **Anticipating future federal costs.** Today the federal government is spending 27 percent of its yearly budget (an estimated $218 billion) on people 65 and over. This proportion could grow to an estimated 50 percent of the federal budget by 2025.

The increases in life expectancy will affect the cost of Veteran's Administration programs and federal employee retirement plans. Some federal retirement plans have not incorporated the increases in life expectancy of the 1970s, leaving them unprepared for future costs.

Women are expected to continue to live longer than men. Women who are single or widowed are more likely to be poor than any other group among the elderly. Focusing research on diseases which disproportionately kill men could allow men to live longer and continue to provide for their wives, as well as receive a better return on their Social Security investment.

Recent Trends In Life Expectancy

Of the proverbial "death and taxes," only the latter can be evaded. Therefore, it is natural for all of us to be concerned with our survival prospects, and for the scientific establishment to be curious about the patterns of human mortality and the factors that influence them.

Future changes in the overall U.S. mortality rate will depend chiefly on what happens to mortality rates at age 65 and above. Mortality rates at these ages also will determine the number of older people for many years to come.

In turn, the number of persons 65 and over will be the major component affecting the future cost of government sponsored programs for the elderly, such as Social Security and Medicare, and will be a large factor in the future demand for health care personnel and facilities. Older people often depend on informal networks of friends and family for support; hence their numbers will shape a variety of demands placed on society.

Most deaths in the U.S. today occur among the elderly. In 1980, almost 70 percent of all deaths in the U.S. were to those 65 or above. If mortality were to remain at 1980 levels, 77 percent of children born today would survive to age 65.

While death now is concentrated in the older ages, death rates at these ages have declined rapidly in recent years. A number of researchers have documented and described this recent decline in mortality among the elderly. Research by Eileen Crimmins has shown that death rates have declined between 1970 and 1977 among both sexes and throughout all the older age groups, ranging from 4 percent for males over age 85 to 16 percent for females between ages 65 and 75. In addition, researchers have noted that the rate of the recent mortality decline is historically unprecedented among a nation's elderly. Advancements in the treatment of heart disease are largely responsible for this decline.

To illustrate the extent of the 1970 to 1977 mortality decline, Crimmins broke the population ages 85 to 99 into five year age groups. (Usually these ages are grouped into one category because data are unreliable.) She found the mortality decline ranged from 8 to 15 percent, well within the range of decline experienced by ages 65 to 84 during that same period. Although caution in using these data must be stressed, they do suggest that significant declines in old age mortality occurred between 1970 and 1977 throughout the entire age range from 65 to 99.

The recent declines have far reaching implications for those involved in projecting the population or planning for the future needs of the elderly. The dramatic impact of the recent mortality decline can best be appreciated by reviewing projections made before this decline was noted.

Projecting Life Expectancy: Past and Present

Death rates at older ages have declined so rapidly in recent years that official life expectancy projections from the Social Security Administration (SSA) have had to be revised upward on practically a yearly basis. In 1974 the SSA projected life expectancy at birth by the year 2000 to be 69 years for males and 76.9 years for females. By 1980, that projection for the year 2000 had already been surpassed; life expectancy was 69.8 for males and 77.7 for females.

More recent projections by Social Security Administration actuaries, however, prepared since 1981, reflect the mortality declines of the

1970s (see Figure 1). Three projections are made assuming a high, moderate and low mortality rate. The major difference between projections made in the early 1970s and those made recently is the assumption that deaths from heart disease and strokes will continue to decrease for the next 25 years at rates similar to those recently experienced.

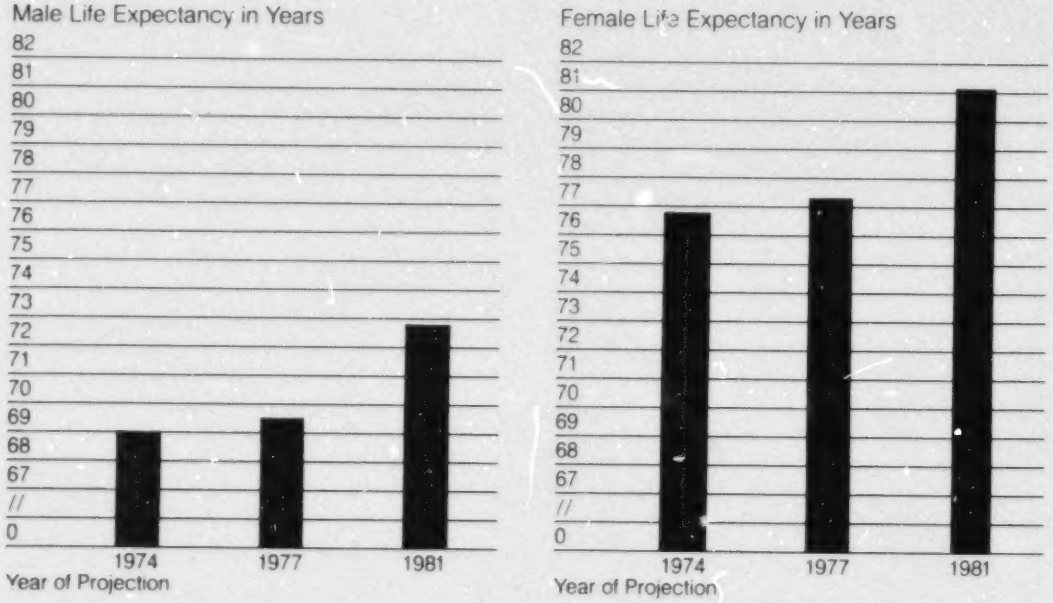
Earlier projections, based on trends prior to 1970, assumed we had almost reached the point where improving life expectancy was no longer possible. This belief was held for a number of reasons. Between 1954 and 1968 there was very little improvement in mortality across the entire age range. Nonviolent death was caused almost totally by chronic diseases, such as strokes and cancer, and assumed to be untreatable without striking medical developments. In fact, the National Center for Health Statistics reported in 1971 that mortality from the major chronic diseases, heart disease and cancer, had been increasing in some age and sex groups.

The projections made during the 1980s assume the United States will continue to reduce death rates from chronic diseases at some substantial fraction of recent rates of decline. Additional perspective on these recent life expectancy projections can be gained by comparing them to projected life expectancy assuming 1) continuation of current trends, and 2) the elimination of certain causes of death.

1) If death rates continue to decline at the same rate which occurred during the 1970s, life expectancy at birth in 2000 would be 80.4, similar to the low official mortality projections made recently by the Social Security Administration for that year. Thus, the new official projections, if anything, tend to assume moderation of recent rates of improvement even over the next two decades.

2) The official high mortality projection anticipates an increase in life expectancy at birth by 2020 of about two years, comparable to the increase calculated if cancer deaths were eliminated.[1] The low mortality projection anticipates

Figure 1
Social Security Administration projections of life expectancy at birth in 2000 by sex, selected years



Source: ref. 1

an increase in life expectancy by 2050 similar to the gain calculated if heart disease deaths were eliminated.[2]

These comparisons make clear, says Crimmins, that those responsible for official mortality projections have answered the call for bolder projections and are projecting possible major increases in life expectancy at older ages. Some analysts might argue, however, that more extreme assumptions yielding even bolder projections could be considered as well.

On the other hand, Lois Verbrugge points out that these projections are based on the extrapolation of recent trends rather than on an understanding of the interaction of the social and biological factors involved. The more known about disease, the process of human aging, and the links between personal behavior, medical care, and disease, says Verbrugge, the better our explanations of the past and projections of the future will be.

Unanticipated Factors Affecting Future Mortality

From time to time new strains of apparently defunct diseases appear, as do previously uncharted infectious diseases such as AIDS and Legionnaire's Disease. Gains in controlling traditional infectious diseases have been so extensive that little additional improvement can be expected; whereas the possibility of an increase in deaths due to the appearance of newer, less-understood infections is real.

Heart disease rates increased for some time and then began a continual downward trend in the past decade or two. Improved medical procedures and some changes in lifestyle, especially exercise and diet, have played a role.

Cancer rates, on the other hand, generally have increased, although declines in specific types of cancer have occurred. Future cancer deaths cannot be predicted with certainty because modern society generates so many potential sources of cancer and the time lag between acquiring a cancer-causing condition and identifying the cancer may be 20, 30 or 40 years.

Environmental pollution from the use of certain chemicals in industrial processes and the careless disposal of toxic wastes threaten public health in numerous ways. Modern behavior extends those threats. Smoking has been identified as a major cause of cardiovascular diseases as well as cancer. Surveys now show higher proportions of young females have smok-

ing habits. This recent trend is bound to affect future death rates.

Several countries, most notably the U.S.S.R., have demonstrated that death rates that declined for a long stretch of time can turn upward again. Recent rises in infant mortality in the Soviet Union, as well as in adult mortality, have been attributed to a number of factors including pollution, alcoholism, and changes in government health care priorities.

The possibility of future military conflicts on the U.S. mainland looms great because the technology of warfare has made distance an almost irrelevant factor. The expanding threat of nuclear missiles (even on a limited basis) also means that the U.S. stands to lose large numbers of people if war takes place. Demographers who make population projections usually assume the absence of cataclysmic events. This assumption becomes less and less tenable with time, at least with regard to long-range projections.

Charles Nam suggests that projections of future mortality should anticipate the impact of modern technology, social behavior, and government policy. Some modern developments have led to reductions in mortality, he says, while others have the potential to increase it, and the balance of these will govern future mortality levels.

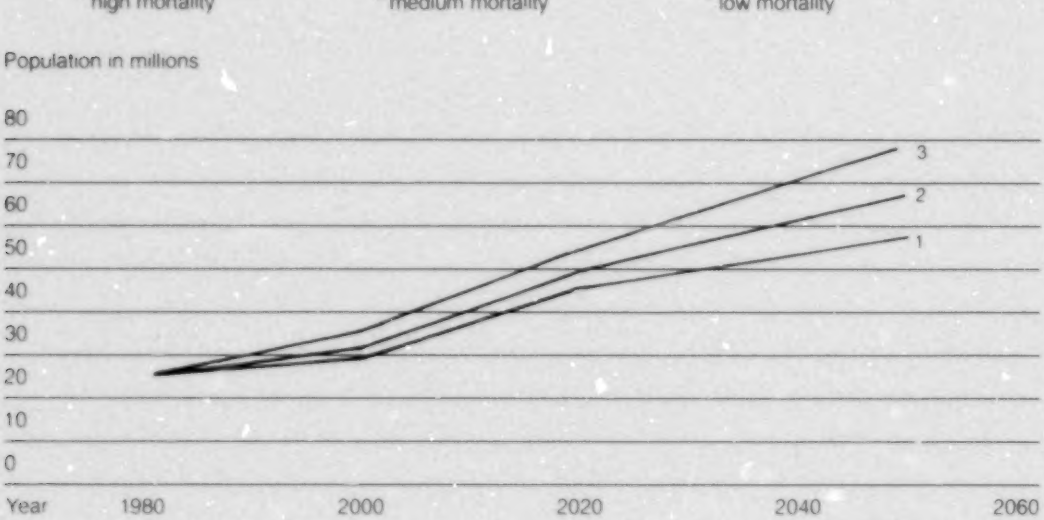
Size of the U.S. Elderly Population

The Census Bureau adapts the Social Security Administration's projections to project the size of the U.S. elderly population. The use of SSA projections in the recent past has led to conservatively low estimates of the size of the elderly population which the Census Bureau has been forced to update and increase regularly.

Past population projections have taken a fairly pessimistic view of future improvement in life expectancy. Also, from World War II through the late 1970s, population projections for the United States were made using three different fertility projections but only one mortality projection. Mortality was deemphasized in population projections because its role in determining the future age distribution of the total U.S. population was deemed small compared to that of fertility. Most of the emphasis was on the relative, rather than absolute, size of the older population.[3] Changes in relative size under varying mortality assumptions seem less dramatic than changes in absolute size. Only recently has increased emphasis on the costs of providing income and health care for the older popula-

Figure 2

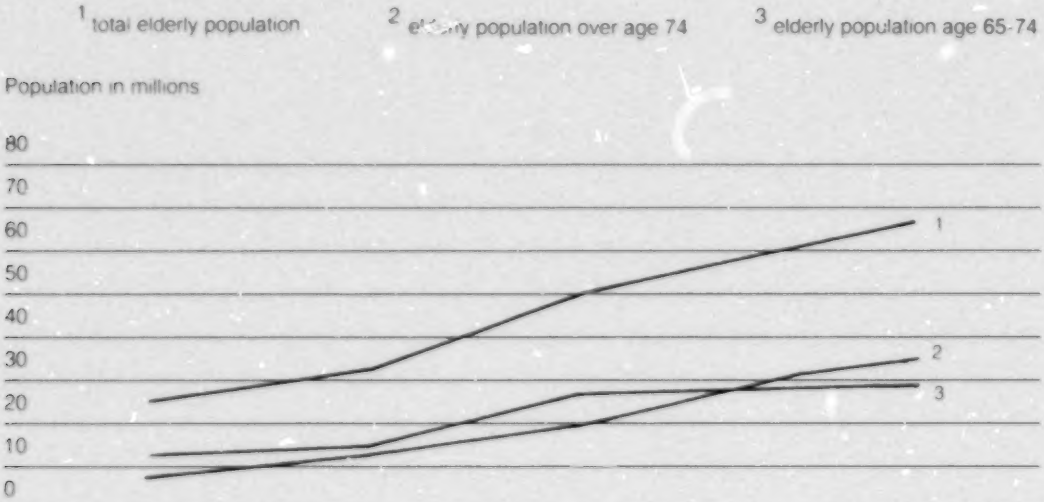
Projected size of U.S. elderly population under three mortality assumptions



Source: ref. 2

Figure 3

Projected size of the U.S. elderly population above and below 74 years of age, using medium mortality assumption



Source: ref. 2

BEST COPY AVAILABLE

tion led to heightened interest in the projected numbers of people 65 and over.

New Census Bureau population projections, made in 1982, answer some of the criticisms of earlier official projections and take into account recent trends (see Figure 2, page 7). These projections differ from earlier projections in that three projections of mortality as well as three projections of both fertility and immigration are made. The projected older population in 2000,

based on the new medium series for all three factors, is 35 million or 13 percent of the total U.S. population. This new projection of the U.S. elderly population in 2000 is 10 percent larger than the 1977 projection of 31 million and 24 percent larger than the 1967 projection of 28 million.

Under the three mortality scenarios of the new Census Bureau projections, the share of the populatio over 64 that is also over 74 will increase from 40 percent in 1981 to around 50 percent in 2000 (see Figure 3, page 7). Then by 2020, the average age of the older population will drop as the portion of the baby-boom generation born between 1946 and 1955 enters the 65 to 74 age group. By 2050 the trend toward increasing age of the older population will have resumed, with the proportion of the elderly population over 74 exceeding that in 2000.

Under all three scenarios the ratio of the projected population 65 and over to the working age population increases only slightly between 1981 and 2000, but then, increases sharply with time. Whereas at present there is roughly one retiree for every five persons of working age, by 2050 this ratio would become 1-to-3 under the high mortality assumption and almost 1-to-2 under the low mortality assumption. It should be noted, however, that the projections of the population age 21 to 64 beyond 2000 depend heavily on future fertility.

In general, the three new Census Bureau projections of the future size of the elderly population do not differ greatly in the short run, and planning to the year 2000 can be done with a relatively narrow range of options. Beyond the year 2000 a much wider range in the size and age of the elderly population must be considered.

All projections considered so far assume life expectancy will continue to improve, but differ in terms of how fast the improvement will occur. Exploring the limits to this improvement raises the possibility of extending life beyond the 100 to 110 year limit we are familiar with. Efforts to improve both the length and quality of life for the aged will affect both life expectancy and the numbers of elderly persons in the future.

Prospects for Extending Human Life

If a 20-year-old and a 60-year-old (both in good health) are paired in a footrace, chances are the 20-year-old will win—the 60-year-old is experiencing the aging process. By age 60 a predictable biological decline has set in that will continue to limit physical capacity. Gray hair, wrinkled skin, blurred vision, impaired hearing, decreased lung capacity and inhibited joint mobility are among the characteristics of this decline.

Modern medicine has left this biological aging process intact. In developed countries, infectious diseases that killed children in the past now are prevented and treated. Consequently, more people are living through youth and reaching what appears to be a fixed, upper age limit.

Thus life expectancy—the average age individuals attain before death—has increased. But the human lifespan—the maximum number of years any person can reach—has remained virtually unchanged since recorded history. Medical achievements have simply allowed more people to approach the "immutable limit." As death in the early years becomes increasingly less frequent in the developed countries, life expectancy curves, which reflect the percent of people living to specific ages, are becoming rectangular, as indicated by the arrow in Figure 4, page 10.

If all causes of death reported on death certificates (diseases and accidents) were totally eliminated, life expectancy curves would reach a nearly rectangular shape. Citizens would live out their lives free of the fear of premature death, but with the knowledge that their normal physiological decline would bring about death on approximately their 100th birthday.

Diseases of old age are superimposed on the normal physiological decline that accompanies biological aging. Because the physiological decline of old age increases an individual's vulnerability to disease, the fundamental causes of death are not diseases, but the physiological decline itself.

Biomedical research, however, has focused almost exclusively on the disease-associated causes of death. Scant attention has been paid to the underlying causes of aging that are not disease-associated, but which, in clocklike fashion, dictate a specific maximum lifespan for each species.

Strategies for Increasing Lifespan

Biomedical research can extend human life over the next 25 years in two ways. The first is to reduce or eliminate the major causes of death that now appear on death certificates. For most developed countries, this would mean eliminating heart disease and cancer. Successfully conquering these two major killers would add approximately 14 years to life expectancy in the U.S. In developing countries (and in some areas of developed countries) life expectancy at birth can be extended by simply motivating the political and economic systems to provide citizens with the necessary food, sanitary facilities, and medical care that are commonplace in most developed countries.

The second way biomedical research can extend human life is by addressing the underlying non-disease related causes of aging. These physiological losses are the basic biological changes that result in the physical decline of aging. Such an approach affects the quality of life and represents an attempt to extend what appears to be a fixed lifespan.

As a measure of the current effort toward these two approaches, funds spent in the United States on heart disease, stroke and cancer research are about 20 times greater than the funds spent on the causes of aging. In both these areas the number of researchers, and

consequently the amount of effort, probably differs twenty-fold as well.

If the potential success of either of these endeavors can be measured by the current attitudes and priorities of the U.S. biomedical research establishment, then the search for heart disease and cancer cures are much more likely to affect human longevity than gerontology research. Eliminating these two diseases can add a fixed number of years to life expectancy, but with successful efforts to increase lifespan, no fixed end point is ruled out. Cures for heart disease and cancer will not reverse or halt the physiological decline of aging, whereas efforts to increase life span could.

Research on heart disease and cancer should not be stopped; but if the goal is to maximize both the quality and length of human life, then current priorities are seriously out of balance, contends Leonard Hayflick.

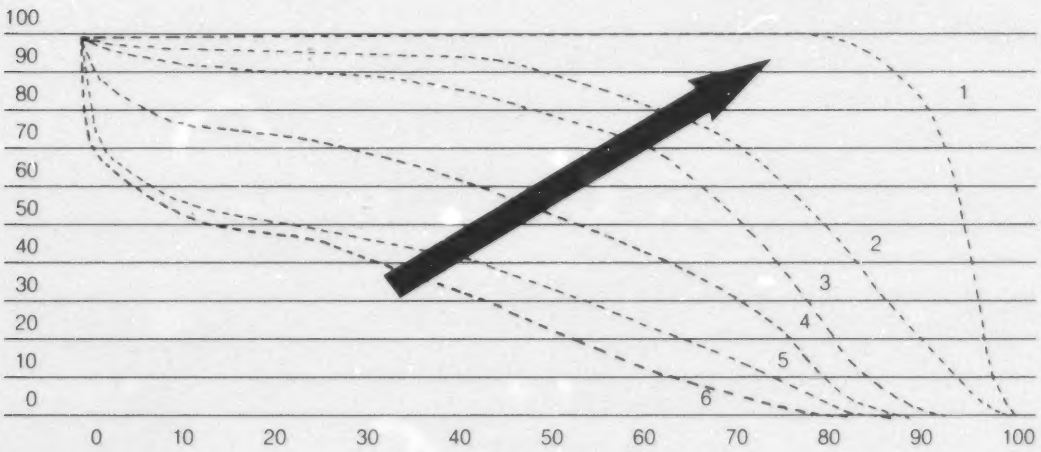
Ethical Considerations

Better hygiene, health care, and nutrition will improve life expectancy substantially for the poorest people now denied basic human needs. No new scientific understanding of aging is required, only motivation and money. Meeting the basic needs of the world's poorest people would increase worldwide life expectancy, but would not affect the lifespan or the rate of aging.

For significant increases in both the length and the quality of life to take place, spectacular scientific achievement will be necessary. To extend life expectancy much beyond the 14

Figure 4
Life expectancy curves for various time periods

1 Ultimate curve
2 U.S. total population, 1980
3 U.S. whites, 1939-41
4 U.S. whites 1900-02
5 Mexico, 1930
6 British India, 1921-30



Source: ref. 3

years eliminating heart disease and cancer would add, an understanding of the biology of aging and the ability to slow down the process would be needed.

The likelihood that either of these events will occur in the then next 25 to 50 years is doubtful in Hayflick's judgment. But if these achievements are made, U.S. social, political, and economic institutions are likely to be severely dislocated. The success in increasing life expectancy from 50 years in 1900 to about 74 today has not been accompanied by greater respect and care for the elderly, says Hayflick. If social support systems for 22 million elderly can not be managed in 1984, he asks, what is the likelihood that more can be done for 28 million elderly in 1990 or 40 million elderly in 2025?

Charles Nam agrees and argues that improving the quality of life is a more humane goal than extending the life of people who have already begun a significant physiological deterioration.

Until better solutions for control of chronic diseases are found and the quality of life for the aged enhanced, the costs of building sophisticated life-support systems and the ethics of pulling the plugs will be even more agonizing in 2025. A new ethical system regarding heroic measures to prolong nonproductive or vegetable life must emerge. Under these circumstances, death is postponed, but aging is not.

Biomedical successes have virtually eliminated deaths in the early years and have permitted more people to grow old. Rather than celebrate this triumph the public has regarded the increasing numbers of older people as a burden. The prevailing negative attitude toward the burgeoning number of older people is tantamount to lamenting the number of baby-boom young people as an equivalent burden that society must endure, says Hayflick. The task of government and other U.S. institutions is to make adjustments and plans that will allow society to cope with all demographic changes positively and humanely.

Counting the Federal Costs of Increased Life Expectancy

Today the federal government is spending 27 percent of its yearly budget (an estimated $218 billion) on people 65 and older. This proportion could grow to an estimated 50 percent of the federal budget by 2025.[4]

Since 1970, life expectancy at age 65 has increased by approximately one and a half years. If this increase had not occurred, present federal outlays would be $9 billion less than they are today. If life expectancy for people 65 and over had increased one year more, however, 1983 federal budget outlays would have increased another $6 billion.

Table 1 shows the full 1983 costs the federal government would have borne if certain causes of death had been eliminated and the aged today had experienced the resulting increase in life expectancy. These increased costs reflect only the percentage increase in life expectancy times the average amount of 1983 outlays spent on the aged. The medical treatment costs saved by the elimination of the disease are not subtracted. Therefore, the figures may overstate the federal burden. Nevertheless, the potential cost increases are too large to be ignored and suggest more attention needs to be focused on future mortality rate changes.

Table 1

Potential increases in 1983 federal costs if certain causes of death were eliminated

Cause of death	Percent increase in life expectancy at age 65	Full federal costs in billions of 1983 dollars
Heart disease	30.9%	$67.4
Cancer	8.5	18.5
Stroke	7.3	15.9
Motor vehicle and other accidents	1.2	2.9

Source: ref. 4

A Simulation: Eliminating Premature Death in 1978

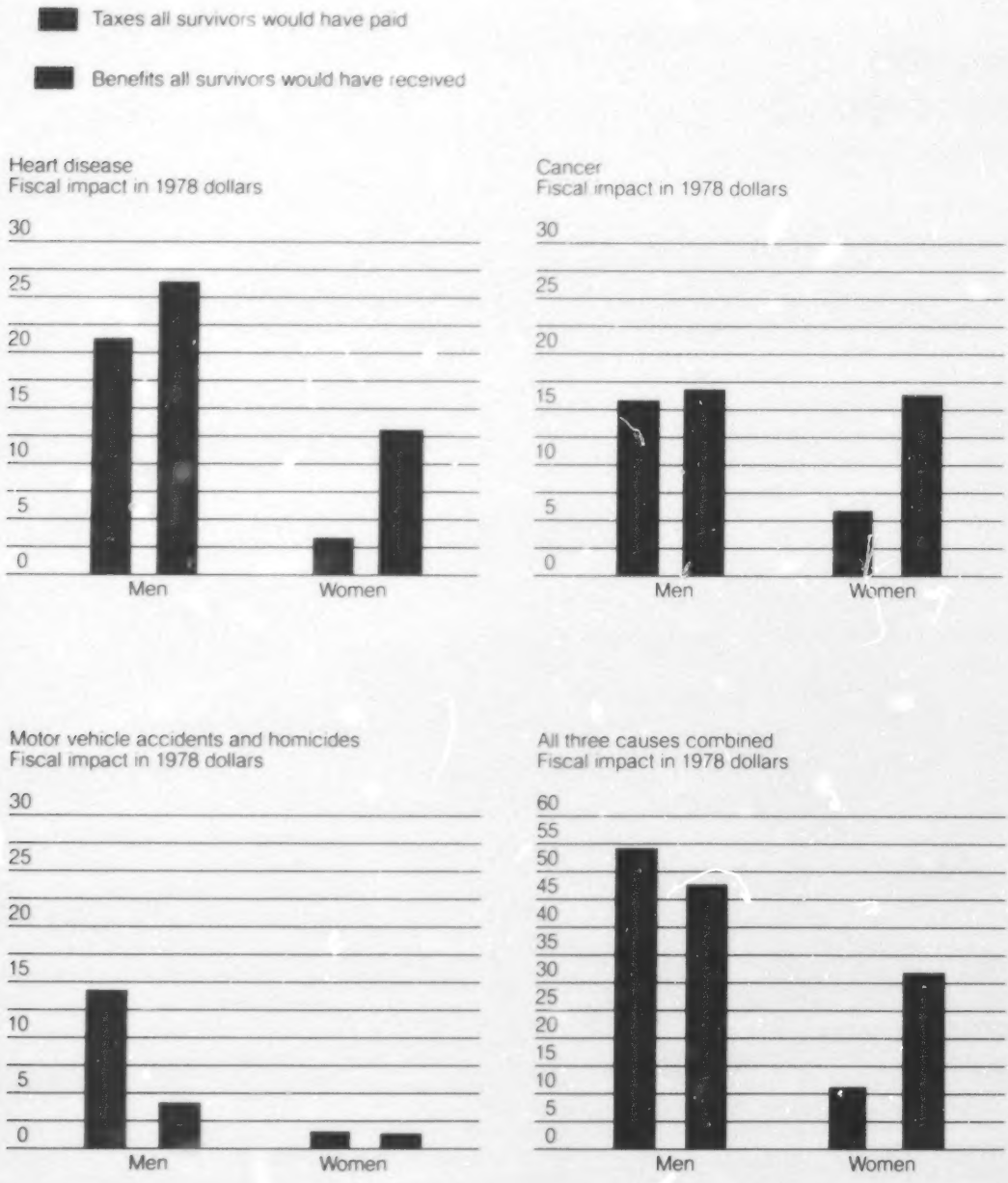
To illustrate the effect of "premature" death on the federal budget, Barbara Torrey and Douglas Norwood calculated what would have happened if those who died in one year had survived to their life expectancies. They examined the three major causes of death (heart disease, cancer, and motor vehicle accidents and homicides) in the year 1978. The total potential taxes the individuals would have paid if they had not died were compared to the total retirement and medical benefits they would have received if they had lived to their 1978 life expectancy.

The estimates were based on a number of simplifying assumptions: State, local and federal taxes are estimated based on the individual's age; benefits are defined as federal programs for the aged and federal and state medical costs; the "resurrected" individuals are assumed to work at average wages for each age group and then retire at age 65; and, the individuals are assumed to avoid premature death from another cause and enjoy the average 1978 life expectancy at age 65.

Any of these assumptions could be made more sophisticated, and the results altered; but these simple assumptions allow the net fiscal effects of early death to be compared and they illustrate how much premature death affects the balance between federal taxes paid and benefits received.

Figure 5, page 13, shows that the total benefits that would have been paid to people had

Figure 5
The federal budget impact of eliminating three causes of early death in one year, by sex



Source: ref. 5

they not died prematurely in 1978 of hea disease, cancer, or car accidents and homicides would have *exceeded* the potential taxes they would have paid by $15 billion. Women received more than they paid, men slightly less.

This is partly because women spend less time in the labor force and live longer than men.

Heart disease accounts for half of all deaths in the U.S. An estimated $24.9 billion in future taxes was lost because of premature deaths from heart disease in 1978. Had the victims lived to their life expectancy, however, they would have claimed $40 billion in benefits for the aged. Therefore, if mortality from heart disease before age 65 is reduced significantly, the demand for benefits for the aged, especially from males who are its major victims, will increase, producing a drain on public treasuries.

Cancer, on the other hand, affects both sexes about equally. Since women earn lower average wages, they pay less in taxes. And, because women live longer than men, women collect more benefits from programs for the elderly. Therefore, if premature deaths from cancer were eliminated, the net fiscal effect would be a substantial loss for women but almost none for men.

The major victims of car accidents and homicides are young men at the beginning of their productive lives. The elimination of these deaths would produce a substantial fiscal gain because future taxes lost from these deaths are greater than potential benefits saved.

For all three cases examined, the federal benefits the individuals would have received had they lived out their life expectancy would have been greater than the taxes they would have paid had they survived. On the other hand, the economy would be larger if the victim's private production and consumption had not been lost. Ultimately, the interaction of these budgetary and economic variables determines the full implications of changes in mortality.

Federal Retirement Plans

Improvements in the death rate can be important in projecting future federal outlays. Estimates of federal outlays for the aged for 2030 would be 40 percent understated if we assume death rates do not improve, but improvements, in fact, continue at the historic rate.

Yet, as of 1981, Civil Service was the only federal employee retirement program that explicitly assumed mortality rates would improve in the future. Mortality rates from a 1977 evaluation were reduced 10 percent in anticipation of future mortality improvements and used as the basis of assumptions made. A 10 percent improvement, however, is only half the improvement that *actually* occurred between 1970 and 1982 for ages 55 to 85 alone. Still, their assumption of some improvement contrasts with most of the other federal retirement plans, which assumed no improvement at all, and in fact used mortality rates based on actuarial tables constructed at least 12 years ago.

Programs for aged veterans also will be affected by increases in life expectancy. Today all veterans 65 and over are defined as disabled and therefore are eligible for full medical benefits. The number of aged veterans and their surviving spouses eligible for benefits is expected to increase from 5 million in 1980 to 15 million by 2000. A one-year increase in life expectancy would increase the number of beneficiaries in 2000 by another one million and increase federal costs correspondingly. The Veteran's Administration will have to redefine the criteria for disability if it is not to bear the full costs of increasing life expectancy.

The Public Costs of Women Surviving Men

Discussing the impact of increased life expectancy on federal programs obscures the more specific issues raised by the unequal increases in life expectancy between sexes. Even though both male and female life expectancy rates will improve, Social Security Administration actuaries assume that the gap in life expectancy between men and women will continue to increase.

Fifty-two percent of all aged women are widowed today. The average length of widowhood is approximately 15 years.

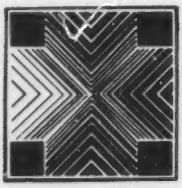
The death of a spouse is not only emotionally traumatic, but widowhood appears to leave the surviving women more vulnerable to poverty. Sixty-five percent of all aged widows would be poor without government programs; 20 percent remain poor even after those transfers. In comparison only 7 percent of aged women who are still married are living below the poverty line. One reason for the difference may be that widows are usually older than aged married women; another may be that they lose the earning power and retirement income of men.

The poverty of widows puts persistent pressure on programs for the elderly. Social services that help support these women in the community will be strained as their number increases.

Women who are 65 and over have fewer days of short-term hospital care than men, but they outnumber aged men almost three to one in nursing homes. In many cases the nursing home becomes the only alternative for an aged person living alone who becomes ill or infirm. An increasing gap in life expectancy between sexes will further increase the need for nursing homes for surviving spouses. Conversely, a decrease in the gap is likely to decrease both the need for nursing homes and the need for support services for a widow or widower who is not yet in a nursing home.

The fiscal impact, however, is ultimately less important than the question of equity. Women today have a life expectancy at birth that is 7½ years longer than that of men. At age 65 the difference is more than 4 years. Largely because women outlive men and spend less time as wage earners, the ratio of benefits to contributions in Social Security for females is nearly twice the ratio for men.

The difference in life expectancy is not just an abstract inequity that results in lower rates of return from Social Security contributions for men. Some actuaries would adjust their formulas to provide men the same rates of return on their contributions as women receive. But this does not solve the whole problem. An alternative, from the standpoint of equity, is to focus biomedical research efforts on reducing mortality rates from causes that disproportionately affect men. This would give men longer lives and a better return on their Social Security contributions. It would also provide more companions for aged women, which is (or should be) a major societal concern.



In Conclusion

Death and taxes are popularly viewed as humanly inescapable and, implicitly, complements of one another. They might better be viewed as alternatives: The postponement of death increases federal costs, requiring more taxes.

If we anticipate the timing and magnitude of these cost increases, we can meet them or adjust programs to minimize the economic burden. But if the political system ignores the potential costs stemming from improving survival rates, the process of adjustment will be more difficult, and almost certainly more costly.

Thomas Mann once insisted that "a man's death is more his survivors' affair than his own." Increasingly, however, the postponement of an individual's death is becoming a federal affair, and one whose implications we cannot ignore.

Footnotes

1. Keyfitz, Nathan. "Improving Life Expectancy: An Uphill Road." *American Journal of Public Health*. 1978. Vol. 68. pgs. 954-956.
2. Tsai, Shan Tou, Eun Sul Lee, and Robert J. Hardy. "The Effects of a Reduction in Leading Causes of Death: Potential Gains in Life Expectancy." *American Journal of Public Health*. 1978. Vol. 68. pages 966-971.
3. Myers, George C. "Future Age Projections and Society." *Aging: A Challenge to Science and Social Policy. Vol. II*. (Oxford: Oxford University Press, 1981).
4. Torrey, Barbara Boyle. "Guns vs. Canes: The Fiscal Implications of an Aging Population." *American Economic Review: Papers and Proceedings*, May 1982.

References

1. Social Security Administration, Office of the Actuary. "Social Security Area Projections: 1974, 1977, and 1981." *Actuarial Studies 72, 76, and 85*.
2. U.S. Bureau of the Census. 1982. "Projections of the Population of the United States: 1982 to 2050." Series P-25, No. 922.
3. Adapted from A. Comfort, *The Biology of Senescence*. 3rd. ed. (New York: Elsevier, North-Holland, 1976).
4. Based on estimates of gains in life expectancy published in National Center for Health Statistics, U.S. Public Health Service. "U.S. Life Tables by Cause of Death: 1969-1971," by T.N.E. Greville; *U.S. Decennial Life Tables for 1969-1971*, Vol. 1, no. 5, 1976.
5. Based on the death rates by age groups and sex published in *Health, United States, 1981*. U.S. Department of Health and Human Services, Public Health Service, (PHS) 82-1232, Dec. 1981.

Photo Credits

Page 2: (upper left corner clockwise) Fred Suter, Michael D. Sullivan, Courtesy of the U.S. Department of Health and Human Services.
Page 5: Warren Uzzle.
Page 6: Jim Durham.
Page 8: Courtesy of the U.S. Department of Health and Human Services.
Page 11: Courtesy of the San Francisco Society for the Prevention of Cruelty to Animals.
Page 14: Courtesy of the U.S. Department of Health and Human Services.
Page 15: Dick Swartz.

The Population Reference Bureau is a private, nonprofit educational organization that gathers interprets and disseminates information on the facts and implications of national and world population trends. Members of the Bureau regularly receive up-to-date population information through four annual POPULATION BULLETINS; through reports of the international population news magazine POPULATION TODAY; and through the widely used WORLD POPULATION DATA SHEET wall chart, a yearly update of demographic data from more than 160 countries.

Educator members receive the Population Reference Bureau's population education newsletter, INTERCHANGE, plus ready-to-use classroom materials.

Topics of particular interest to policymakers are discussed in a series of four-page Executive Summaries covering issues ranging from migration within the U.S. to women in the workforce. The POPULATION TRENDS AND PUBLIC POLICY series is distributed to legislators, government officials and others interested in the policy impact of demographic trends.

The Population Reference Bureau's Library and Information Service provides fast, authoritative responses to questions about population and offers the resources of one of the world's oldest and most complete collections of related materials.

Membership in the Population Reference Bureau may be obtained by writing the Circulation Department, Population Reference Bureau, 2213 M Street, N.W., Washington, D.C. 20037. Individual memberships are $30 per year; $20 for educator members; $10 for associate educator members; $10 for students. The rate for libraries is $40; institutions or firms, $200.

Policy Studies Advisory Committee

Katherine Lyle, Provost, University of Wisconsin, Madison
Sara Mazie, Senior Specialist, Research and Analysis, Office of Rural Development and Policy, U.S. Department of Agriculture
Rufus Miles, former Senior Associate, Woodrow Wilson School of Public and International Affairs, Princeton University
Robert Parke, Program Director, Cancer Prevention and Control Project, National Cancer Institute
Lyle Saunders, Independent Consultant
Conrad Taeuber, Senior Research Scholar and Professional Lecturer, Center for Population Research, Georgetown University

Population Reference Bureau, Inc.
2213 M Street, N.W.
Washington, D.C. 20037 (202) 785-4664

ISSN 0736-7716